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A Reply to Emesby.—EDITOR OF BOTANICAL GAZETTE: My genial critic Emesby, in your last issue, says "*Systematic Botany Nevertheless*," with which I am absolutely in accord, and in proof whereof quote from my previously published paper on *Modes of Teaching*, these words: "Systematic botany must, if it represents a strictly natural system, be founded on a nice appreciation of the entire organization, the life history of the individual and its relation in past and present time to allied plants. *This, then, is the highest, all embracing trend botanical thought can assume.*" Surely there is in that nothing but unqualified respect for systematic botany under whose ægis honored leaders have established a glorious record for our country.

Neither, my good Emesby, have I ventured to dream, much less to suggest that a final system had been attained. I have told how thorough a "*foundation*" Torrey, Gray, Engelmann and Watson have laid, but the superstructure is another question. I can well admit that systematic botany will boil and bubble into no one knows how many changing forms before it comes to the crystalline condition with its angles clear and sharp and its points absolutely fixed. There is ample work for generations of systematists before the high ideal I have above hinted at shall have been attained,

Mr. Darwin was named not to encourage any one in the idea that all could enter the harvest field and return with such a load of sheaves as he, but to show what the productiveness of the field was.

Now then, oh Emesby, friend, why did I write such radical things in that somewhat pointed paper? First, to make those who rest satisfied with the mere name dissatisfied and to lead them to a little fuller study of the plant itself. Second, to protest might and main against colleges that boast of their thorough teaching outfit allowing a student to go away with the idea that our science had no other side than the systematic. I have in a small way started that "*School of Botany*," (and I wish the teacher were more worthy of the kind words Emesby has written of him) and in it I start with microscopic botany, urging that my pupils see for themselves, draw for themselves and come to their own conclusions. After some months in such mental drill, I shall introduce them to systematic botany with the hope that their eyes will be the sharper and their reasoning power the keener for the ordeal that they have passed. Thus I hope to lay a foundation for a better knowledge of many plants and to beg efficiently for the "*highest*, all embracing trend botanical thought can assume,i. e., Systematic Botany. Very sincerely yours,

J. T. ROTHROCK.

The Botanist in Arizona.—This territory is fast becoming the favorite haunt of our more intrepid collectors, for its physical features, while most forbidding so far as comfort is concerned, favor the growth of very peculiar plants. The Lemmons, Pringle, Greene. Vasey, Jones' and James have all been there and nearly all have specimens of the wonderful flora for sale. But when, amidst the comforts of our herbaria, we revel in the riches their carefully prepared bundles bring

to us, we must not forget what they have cost, for nowhere in this country is botanizing accompanied by such discomfort and actual suffering. Nature seems to delight in guarding her treasures well and has surrounded her choicest gifts with difficulty and danger; and as if sand and heat were not sufficient to warn off the intruding botanist in this land of the Apache, the vegetation also puts on a most forbidding aspect and wrings from him a tribute of blood. The last *Californian* contains a spicy account of a "Botanical Wedding Trip" made to this inhospitable region by Mr. J. G. Lemmon and wife. The hardships they endured in their eager search for plants are almost incredible, but the results amply repaid them. Add to intolerable heat, glaring sand and rattlesnakes, the following condition of things, and it will be seen that our plants are dearly bought. "The way was along a sandy creek-wash, with patches of boulders and occasional steep ascents, the whole way beset with cacti of varied degrees of formidable armature, from the innocent pin-cushion cactus, that only catches to your feet and clothing with its fishhook spines while the other straight spines tickle you, to the horrid, wide-branching tree cactus, with its long, glistening barbed spines, that completely clothe limbs and buds, the latter being shed off so frequently, and in such abundance, that they form high mounds under the trees, and often are scattered about for many rods. Any of these spines is strong enough to pierce through a cowhide boot-leg; and when it reaches the flesh you are gone. The retrorse barbs cause it to continue entering the more you strug gle. The best thing to do is to break it off at once where you can, and let the rest fester and come away with the pus.

"Almost as cruel are the bushes of an acacia, appropriately called "cats's-claws," that crowd in the trail, and reach their slender limbs across the way, armed every half inch with pairs of strong, recurved thorns, that tap your veins unawares, and cause you to add drops of blood to the perspiration that drips almost constantly from your person."

"Perhaps no torture known exceeds that produced by attempting to extract these cactus) spines from human flesh. One of the favorite tortures inflicted upon captive whites by the Apaches is to strip their victims of clothing, tie their hands and feet, then hurl them against these cacti, rolling them with their lances over upon the broken-down branches, until the poor wretches die from the fiendish torment. Animals in Arizona, impelled by hunger or thirst, often expose their noses to these attacks, when they become mad with pain and die amidst frantic efforts to remove the burs. It is the worst country in the world for sheep. I have seen unsophisticated lambs that had caught a bur from lying down. In attempting to remove it with their teeth, the nose had become attached to the side, and death from starvation was inevitable."

So long as such a condition of things exists the average botanist will be perfectly content to pay from seven and a half to ten dollars per hundred species and enjoy them without such an outlay of sweat and blood.